

07/852390

= glutamine synthetase?
2031 GLUTAMINE
1424 SYNTHETASE?
L1 44 GLUTAMINE SYNTHETASE?
(GLUTAMINE (C) SYNTHETASE?)

=) s 11 and vector?
36613 VECTOR?
L2 17 L1 AND VECTOR?

=) s 12 and amplif?
174595 AMPLIF?
L3 11 L2 AND AMPLIF?

=) d cit,ti,ab,1-11

1. 5,145,777, Sep. 8, 1992, Plant cells resistant to herbicidal
glutamine **synthetase** inhibitors; Howard M. Goodman, et al.,
435/172.3, 69.1, 240.4, 320.1; 504/206, 319, 320, 322; 536/23.2, 23.6;
800/200, 205, 255; 935/33, 35 [IMAGE AVAILABLE]

US PAT NO: 5,145,777 [IMAGE AVAILABLE] L3: 1 of 11
TITLE: Plant cells resistant to herbicidal **glutamine**
synthetase inhibitors

ABSTRACT:

A plant cell which is resistant to a herbicidal **glutamine**
synthetase inhibitor, wherein the resistance is caused by levels of
GS activity which, when present in an otherwise herbicidal GS inhibitor
sensitive plant cell, render the cell substantially resistant to the
herbicidal GS-inhibitor.

2. 5,137,816, Aug. 11, 1992, Rhizobial diagnostic probes and rhizobium
trifolii nifH promoters; Barry G. Rolfe, et al., 435/172.3, 252.2, 252.3,
320.1, 878; 536/23.6, 23.71; 935/41, 72 [IMAGE AVAILABLE]

US PAT NO: 5,137,816 [IMAGE AVAILABLE] L3: 2 of 11
TITLE: Rhizobial diagnostic probes and rhizobium trifolii nifH
promoters

ABSTRACT:

This invention provides useful promoters from the *R. trifolii* nifH gene
for the construction of recombinant molecules to regulate foreign genes
for expression under desired conditions. In particular, the promoters act
to control expression of the foreign genes within root nodules formed by
rhizobial bacterial strains in symbiotic combination with host plants.
A rhizobium diagnostic segment (RDS) is also provided comprising a DNA
segment found at more than one location in rhizobia, the RDS being
species-specific, and detectable by DNA hybridization under stringent
conditions. A recombinant plasmid comprising a RDS and a bacterial strain
containing the plasmid are provided. Methods are provided for identifying
species and strains of field isolates of Rhizobium, using RDS's. One RDS
exemplified comprises 5' sequences from the *R. trifolii* nifH gene.

3. 5,122,464, Jun. 16, 1992, Method for dominant selection in eucaryotic
cells; Richard M. Wilson, et al., 435/172.3, 320.1 [IMAGE AVAILABLE]

US PAT NO: 5,122,464 [IMAGE AVAILABLE] L3: 3 of 11
TITLE: Method for dominant selection in eucaryotic cells

ABSTRACT:

Recombinant DNA sequences which encode the complete amino acid sequence of a **glutamine synthetase**, **vectors** containing such sequences, and methods for their use, in particular as dominant selectable markers, for use in **co-amplification** of non-selected genes and in transforming host cell lines to glutamine independence.

4. 5,098,838, Mar. 24, 1992, Expression of wild type and mutant **glutamine synthetase** in foreign hosts; Howard Goodman, et al., 425/102, 252.3, 252.33, 320.1; 536/23.2, 23.6; 935/10, 27, 29, 66, 67, 72, 73 [IMAGE AVAILABLE]

US PAT NO: 5,098,838 [IMAGE AVAILABLE] L3: 4 of 11
TITLE: Expression of wild type and mutant **glutamine synthetase** in foreign hosts

ABSTRACT:

The invention relates to a mutant **glutamine synthetase** (GS) enzyme which is resistant to inhibition by herbicidal GS inhibitors, such as phosphinothricin (PPT), genetic sequences coding therefor, plants cells and prokaryotes transformed with the genetic sequences, and herbicidal GS inhibitor-resistant plant cells and plants.

5. 5,043,270, Aug. 27, 1991, Intronic overexpression **vectors**; John M. Abrams, et al., 435/69.1, 172.3, 240.1, 320.1; 536/23.2, 23.5; 935/34, 61, 66, 70, 71, 73, 84 [IMAGE AVAILABLE]

US PAT NO: 5,043,270 [IMAGE AVAILABLE] L3: 5 of 11
TITLE: Intronic overexpression **vectors**

ABSTRACT:

DNA constructs are provided employing intronically positioned expression systems, where one of the genes is a dominant gene, usually **amplifiable**, and the other gene encodes a sequence of interest. Higher levels of co-expression are achieved than when the genes are ligated in tandem. Specifically, the gene of interest is inserted into the intron of a DMR minigene, the construct transformed into a mammalian cell and the resulting transformants stressed with progressively increasing levels of methotrexate. Substantially increasing levels of co-expression are achieved with increasing levels of methotrexate.

6. 5,003,194, Apr. 16, 1991, **nifH** promoters of *Bradyrhizobium*; Barry C. Rolfe, et al., 435/172.3, 252.2, 252.3, 320.1; 536/23.6, 24.1; 935/6, 35, 41 [IMAGE AVAILABLE]

US PAT NO: 5,003,194 [IMAGE AVAILABLE] L3: 6 of 11
TITLE: **nifH** promoters of *Bradyrhizobium*

ABSTRACT:

The **nifH** promoter regions of *Bradyrhizobium japonicum* and *Bradyrhizobium sp. (parasponia)* have been sequenced and found to be significantly homologous. Recombinant DNA molecules comprising foreign genes under the control of such promoters are provided. Rhizobial species containing such recombinant constructions, either in plasmids or integrated into the genome, are provided. These are especially useful for expressing desired foreign genes within root nodules.

7. 5,001,011, Mar. 10, 1991, **nifD** promoter of *Bradyrhizobium*; Barry C. Rolfe, et al., 435/172.3, 252.2, 252.3, 320.1; 536/23.1, 23.5, 24.2;

005/6, 25, 41 [IMAGE AVAILABLE]

US PAT NO: 5,001,061 [IMAGE AVAILABLE]
TITLE: nifD promoter of Bradyrhizobium

L3: 7 of 11

ABSTRACT:

The nifD promoter regions of Bradyrhizobium japonicum and Bradyrhizobium sp. (Parasponia) have been sequenced and found to be significantly homologous. Recombinant DNA molecules comprising foreign genes under the control of such promoters are provided. Rhizobial species containing such recombinant constructions, either in plasmids or integrated into the genome, are provided. These are especially useful for expressing desired foreign genes within root nodules.

9. 4,975,374, Dec. 4, 1990, Expression of wild type and mutant ****glutamine** synthetase**** in foreign hosts; Howard Goodman, et al., 435/172.3, 163, 252.3, 252.33; 525/23.2, 22.6; 935/14, 29, 32, 73 [IMAGE AVAILABLE]

US PAT NO: 4,975,374 [IMAGE AVAILABLE] L3: 8 of 11
TITLE: Expression of wild type and mutant ****glutamine** synthetase**** in foreign hosts

ABSTRACT:

The invention relates to a mutant ****glutamine** synthetase**** (GS) enzyme which is resistant to inhibition by herbicidal GS inhibitors, such as phosphinothricin (PPT), genetic sequences coding therefor, plants cells and prokaryotes transformed with the genetic sequences, and herbicidal GS inhibitor-resistant plant cells and plants.

9. 4,956,283, Sep. 11, 1990, Method for producing cells containing stably integrated foreign DNA at a high copy number, the cells produced by this method, and the use of these cells to produce the polypeptides coded for by the foreign DNA; James G. Barsoud, 435/172.3, 69.1, 70.1, 71.1, 172.1, 252.3; 935/16, 33, 52 [IMAGE AVAILABLE]

US PAT NO: 4,956,283 [IMAGE AVAILABLE] L3: 9 of 11
TITLE: Method for producing cells containing stably integrated foreign DNA at a high copy number, the cells produced by this method, and the use of these cells to produce the polypeptides coded for by the foreign DNA

ABSTRACT:

An improved method, employing electroporation, for producing novel recombinant host cells characterized by stably integrated foreign DNA at high copy number. These recombinant host cells are useful in the efficient, large-scale production of recombinant proteins and polypeptides.

10. 4,803,165, Feb. 7, 1989, Nif promoter of fast-growing rhizobium japonicum; Edward R. Appeltau, 435/172.3, 69.1, 252.2, 252.33, 320.1; 525/22.6, 22.7, 22.71, 24.1; 935/23, 30, 41, 56, 64, 67, 72

US PAT NO: 4,803,165 L3: 10 of 11
TITLE: Nif promoter of fast-growing rhizobium japonicum

ABSTRACT:

The promoter of the nifH gene of the fast-growing Rhizobium japonicum strain USDA 191, has been cloned. Over 4.2 kilobase pairs (kbp) of DNA were sequenced (FIG. 1). Sequences encoding nifH and the 5'-end of nifD

were identified, as were sequences involved in promoting operon transcription and a nifH ribosome binding site. Use of the nifH promoter to drive transcription in Rhizobium of heterologous structural genes is taught. Useful sequences and plasmids are also disclosed.

11. 4,782,022, Nov. 1, 1988, Nitrogen fixation regulator genes; Alfred Puhler, et al., 435/172.3, 252.2, 252.33, 320.1; 535/23.2, 23.6, 23.71, 24.1; 930/200; 935/29, 56, 72

US PAT NO: 4,782,022

L3: 11 of 11

TITLE: Nitrogen fixation regulator genes

ABSTRACT:

Isolation and characterization of a gene which activated nitrogen fixation genes of Rhizobium meliloti when that bacterium is in a symbiotic relationship with a plant is disclosed. This newly discovered gene, designated fix D, can activate the nifHD promoter. A method of making this inducible gene constitutive is presented. This is useful for making nifHD constitutive. The combination of the fixD promoter with heterologous structural genes is taught. Such combinations are useful for limiting expression of an encoded protein to rhizobia involved in a symbiotic relationship with a plant. Plasmids and methods useful in performance of this invention are also disclosed.

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